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Estimation of carbon sequestration by cinnamon grown in WL2a agro ecological zone

H. G. R. K. Lakprasadi* and C. M. Navaratne

[1]Department of Agric Engineering, Faculty of Agriculture, University of Ruhuna, Sri Lanka.
*rushani.rkl@gmail.com

Abstract

Carbon sequestration through plant has the potential to play a significant role in ameliorating global environmental problems such as atmospheric accumulation of green house gas and climate change. Cinnamon is better plant, which is capable of removing carbon from atmosphere through the carbon stored in their biomass. Present study was carried out in determine the carbon sequestration by 8 years old cinnamon plantation in Low country Wet zone (WL2a), Sri Lanka. Further the research carried out, to find out the relationship between volume and amount of carbon fixed by cinnamon crop and to develop the relationship among biomass, height and diameter of cinnamon crop. Three plots size of 4× 4.5 m^2, were selected from each plantation according to simple random sampling method for the study. Amount of carbon calculated by using loss on ignition method and an allometric equation was used to derive the relationship for biomass. Average CO_2 sequestration for 8years old cinnamon, was 4.04t / ha / yr. Carbon% of leaf, stem and root of cinnamon were 48.46 %, 48.53% and 49.15% respectively. The relationship between amount of Carbon (C) and volume (V) of stem of cinnamon was C = -0.144+311 V (R^2=99.3%). Also the relationship between amount of biomass (W), height (H) and diameter (D), was $W = 0.078D^2H$ (R^2=96.4%). Density of cinnamon wood was 890 kgm^{-3}.The developed equations will be useful to find carbon sequestration by cinnamon without destroying the plants.

Key words: Carbon sequestration, *cinnamon verum,* loss on ignition method